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7-19-93**UNITED STATES DEPARTMENT OF COMMERCE**
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICENMFS Northwest Regional Office F/NWO
7600 Sand Point Way NE
Seattle, WA 98115-0070

19 July 1993

MEMORANDUM FOR:Elliott Bay/Duwamish Restoration Program
Sediment Remediation Technical Working Group**FROM:**
Michael Francisco
NOAA Restoration Center NW.**SUBJECT:**

Fox Avenue South CSO/SD

During a recent foray into background literature on sediment contamination in Elliott Bay and the Duwamish River, I reviewed a PSEP document entitled *Elliott Bay Action Program: Evaluation of Potential Contaminant Sources* (Tetra Tech, September 1988). This document presents the results of extensive sampling and analysis of sediments taken from storm drains and CSOs in Elliott Bay and the lower Duwamish River. The sediments taken from these pipes were also compared to sediments in the receiving environment (Elliott Bay Action Program: Analysis of Toxic Problem Areas. Final Report. PTI Environmental Services and Tetra Tech. 1988). Most of you may be familiar with these documents already, but the following is a brief synopsis of information from Tetra Tech (September 1988) relating to Fox Ave. S. CSO/SD.

- CSOs and storm drains in "project drainage boundaries" – roughly the same as the covered area in the consent decree – were ranked in order of priority for source control based on chemical analysis of sediments taken from the drains, and based on the following criteria:

1. Number of problem chemicals identified in each drain
2. Magnitude of exceedence of reference area sediment chemistry conditions based upon the elevation above reference (EAR) technique.
3. Contaminant loading index for each drain. The loading index is the product of the concentration of the contaminant measured in the drain sediments and the estimated average annual flow for each drain.

Based upon this ranking technique, Fox Ave. S. (as well as Michigan CSO, Slip 4 CSO/SD, Duwamish SD, SW Lander CSO/SD, SW Hanford CSO/SD, Slip 6 SD and Michigan SD) was given a high priority ranking. Fox Ave. S. had the highest number of problem chemicals of any drain sampled (32).

- Sediments in Slip 3 (Station DR - 12), adjacent to Fox Ave, contained high levels (exceeding high apparent effects thresholds) of arsenic, zinc, copper and lead, as did sediments taken from the storm drain. Historic practices at the Marine Power and Equipment shipyard served by the Fox Ave storm drain, including sandblasting with grit derived from smelter slag, "may have been responsible for metals contamination in Slip 3 sediments." In addition, high levels of both high and low molecular weight polyaromatic hydrocarbons, dibenzofuran, phthalates, phenols, vinyl chloride, etc., were found in the drainage system.



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- The Fox Ave CSO is no longer active, and only overflows during extreme storm events (five year storms or greater). The storm drain serves 32 acres with an annual estimated discharge of 30 Mgal/yr.

Based on this information alone, I would suggest that the Sediment Remediation Technical Working Group add Fox Ave. CSO/SD as a potential sediment remediation project. The area considered for sediment remediation would likely include Slip 3. I think that the site would compare favorably with other sites currently ranked as medium priority. For example, sediment toxicity index is probably high, as is degree of source control. Potential to address injury is high, given the relatively shallow depths in Slip 3 (six to twenty feet with some intertidal area). Human contact is probably moderate, but there is a boat ramp under the First Avenue South Bridge adjacent to the site. The potential for public education may exist at the boat ramp.

I hereby nominate this site for consideration. Additional source control undertaken by the City to protect this site could include cleaning of sediments from the Fox Ave storm drain, if this has not already been undertaken.